

*22**21*

SAC 10 12. The paper of claim *11* in which said characteristic is a chemical characteristic.

*23**21*

13. The paper of claim *11* in which said characteristic results in a substantially human-imperceptible optical patterning of said paper after said paper is developed.

*24**21*

14. The paper of claim *11* in which the auxiliary information signal is a copy control signal.

4 X 25

15. A printing kiosk comprising:

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a photographic emulsion paper according to claim *14*, exposed and developed to convey an image;

a lens for imaging said paper onto an opto-electronic detector;

a print-writing device for producing a print in accordance with image data gathered by said detector from said paper;

a memory for receiving data from the opto-electronic detector; and

a processor for processing data in the memory to detect said copy control signal, and for interrupting a usual print-making process of said print-writing device in response to said auxiliary information signal.

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SAC 22 16. A photographic emulsion paper suitable for exposing and developing to produce an image thereon, characterized by a binary data signal encoded in a coating thereon.

*6 29**26*

17. The paper of claim *16* in which said data signal is steganographically encoded.

*7 28**26*

18. The paper of claim *16* in which said binary data signal comprises a plurality of bits.

*8 29**26*

SAC 22 19. The paper of claim *16* in which said binary data signal is encoded in an emulsion coating.

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20. The paper of claim ~~16~~ in which said binary data signal is encoded in the form of a chemical characteristic that varies as a function of location across said paper.

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21. The paper of claim ~~20~~ in which said chemical characteristic varies due to a low level optical exposure of said coating.

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22. A method of processing a photographic paper during manufacture and prior to exposure by an end user thereof, comprising:
generating a pattern having an auxiliary information signal steganographically encoded therein; and
encoding said paper in accordance with said pattern, said encoding not impairing subsequent use of the paper by said end user.

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23. The method of claim ~~22~~ in which the auxiliary information signal is a copy control signal.

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24. The method of claim ~~22~~ in which said auxiliary information signal comprises binary data.

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25. The method of claim ~~24~~ in which the generating includes processing the binary data in accordance with a pseudo-random noise signal, wherein the pattern is a function, in part, of said pseudo-random noise signal.

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26. The method of claim ~~22~~ in which the encoding of the paper results in a patterning coextensive with the paper.

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27. The method of claim ~~22~~ in which said encoding comprises processing a chemical coating on said paper.

*38**37*

Sab Dv []
28. The method of claim ~~27~~ in which said processing comprises exposing an emulsion coating on said paper with an optical representation of said pattern at a low exposure level.

*17 18**38**X 10**38*

29. The method of claim ~~22~~ which includes encoding a calibration signal together with said auxiliary information signal, said calibration signal having known properties and providing known data useful in decoding the auxiliary information signal from said paper, said encoded calibration signal being substantially imperceptible to a human viewer of the encoded paper.

*18 19**70**10**33*

30. A photographic paper produced according to the method of claim ~~22~~.

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Sab Cu []
31. A method of processing a photographic paper during manufacture and prior to exposure by an end user thereof, comprising:

generating a pattern representing an auxiliary information signal;

encoding said paper in accordance with said pattern, said encoding not impairing subsequent use of the paper by said end user;

said encoded pattern being substantially coextensive with said paper.

*42**41*

32. The method of claim ~~31~~ in which said encoding comprises processing a chemical coating on said paper, wherein a substantially human-imperceptible pattern is formed thereon when the paper is thereafter developed.

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33. The method of claim ~~32~~ in which the encoding includes encoding the auxiliary information signal redundantly across the paper through said pattern, thereby allowing detection of the auxiliary information signal from first and second non-overlapping regions of said paper.

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34. An article, said article comprising a layer of material, said layer appearing uniformly transparent to a human viewer thereof, said layer having a characteristic which varies as a function of location thereacross, said variation effecting a patterning of said material, said patterning having an auxiliary information signal steganographically encoded therein.

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35. The article of claim 34 in which said characteristic is an optical characteristic.

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36. The article of claim 34 in which said characteristic is a chemical characteristic.

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37. A method of producing an information-conveying article, comprising:
providing a layer of material, said layer appearing substantially transparent to a human viewer thereof; and
processing said material to change a property thereof on a localized basis, said change resulting in a patterning of said material, said patterning having an auxiliary information signal steganographically encoded therein.

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38. The method of claim 37 in which said auxiliary information signal is a binary information signal.

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39. The method of claim 37 in which said property is an optical property, wherein said patterning is optically detectable.

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40. The method of claim 37 in which said processing includes changing chemical characteristics of said material on a localized basis to effect said patterning.

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41. A method of producing a card- or paper-like article having an auxiliary information signal encoded therewith, comprising:

(a) providing a substrate;

(b) applying a layer of material over said substrate;

(c) processing said layer of material to form a pattern therein, said pattern having an auxiliary information signal steganographically encoded therein; and

(d) thereafter, processing said article to carry human-perceptible information thereon.

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42. The method of claim ~~41~~ in which said layer of material is substantially transparent to a human viewer thereof.

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43. The method of claim ~~41~~ in which step (c) includes changing chemical characteristics of said material on a localized basis to effect said patterning.

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44. The method of claim ~~41~~ in which step (c) includes changing optical transmissivity of said material on a localized basis to effect said patterning.

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45. The method of claim ~~41~~ in which step (d) includes performing a printing process on said article.

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46. The method of claim ~~41~~ in which step (d) includes exposing said article to generate a photographic image thereon.

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47. The method of claim ~~41~~ in which said layer of material is photoreactive.

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48. The method of claim ~~41~~ which includes exposing said layer of material to form said pattern therein.

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49. The method of claim ~~41~~ in which said processing results in formation of only said substantially imperceptible pattern therein.

30 3X 6X

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50. The method of claim 41 in which said auxiliary information signal is a binary information signal.

31 32 6X

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51. An exposed photographic emulsion paper produced by the method of claim 41.

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52. In a photo-duplication kiosk including a lens for imaging a customer-provided photograph onto an opto-electronic detector, and a print-writing device for producing a print in accordance with image data gathered by said detector, an improvement comprising:

a memory for receiving data from the opto-electronic detector; and

a processor for processing data in the memory to detect the presence of a copy control signal steganographically encoded therein, and for interrupting a usual print-making process of said print-writing device in response thereto.

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53. In a photo-duplication kiosk including a lens for imaging a customer-provided photograph onto an opto-electronic detector, and a print-writing device for producing a print in accordance with image data gathered by said detector, an improved method of operation including:

analyzing the image data to discern a control signal steganographically embedded therein; and

interrupting a usual print-making process of said print-writing device in response to said control signal.

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34 35 6X

54. The method of claim 53 in which said control signal comprises a plurality of bits.

35 36 6X

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55. The method of claim 53 which includes discerning the control signal from the customer-provided photograph notwithstanding a rotational misalignment of said photograph from a correct alignment thereof.

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~~36 35~~

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~~56.~~ The method of claim ~~55~~ in which said analyzing includes performing a plurality of statistical analyses on said data.

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~~34 33~~

~~63~~

~~57.~~ The method of claim ~~53~~ in which said analyzing includes performing a plurality of statistical analyses on said data.

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~~34 33~~

~~63~~

~~58.~~ The method of claim ~~53~~ in which said analyzing includes a spectral analysis of the image data to discern spectral components thereof.

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~~34 34~~

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~~59.~~ The method of claim ~~53~~ in which said analyzing includes transforming the image data to a spatial frequency domain.

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~~40 39~~

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~~60.~~ The method of claim ~~59~~ which further includes identifying a pattern in said frequency domain data.--